DECLARATION

I, Sun YOU of 168-32, Seongbuk-gu, Seongbuk 1(il)-dong, Seoul, Republic of Korea declare that I have a through knowledge of the Korean and English language and the writings contained in the following pages are correct translations of the attached Korea Patent Application No. 10-1998-41481.

This 11th day of April, 2003

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(Translation)

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Applicant : LG Electronics, Inc.

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Commissioner

[SPECIFICATION]

[TITLE OF THE INVENTION]

METHOD FOR BRANCHING DATA IN A THIRD-GENERATION MOBILE COMMUNICATION SYSTEM

[BRIEF DESCRIPTION OF THE DRAWINGS]

Fig.1a is a view illustrating a branching data of a mobile station and a network applied to method for branching data in a third-generation mobile communication system in accordance with the present invention.

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND DISCUSSION OF THE RELATED ART]

The present invention relates in general to a third-generation mobile communication system, and more particularly to a method for branching data in a third-generation mobile communication system. Until now, a conventional mobile communication system has provided only a pure speech service or a simple short message service(referred to hereafter as SMS). With a third-generation mobile communication system being developed, there have recently been proposed a multimedia service and short/long packet services.

Such third-generation services require a new layer,

which is called a media access control(referred to hereinafter as MAC) sublayer.

It has to perform a branching operation suitable to a service characteristic in order to appropriately process a variety of services.

[TECHNICAL TASKS TO BE ACHIEVED BY THE INVENTION]

The conventional mobile communication system is disadvantageous in that the MAC sublayer cannot efficiently branch various multimedia and packet services because the system provides only simple services such as the SMS.

Therefore, the present invention has been made in view of the above problem, and it is an object of the present invention to provide a method for branching data in a third-generation mobile communication system to perform mapping and multiplexing/demultiplexing between logical channels and transport channels bounded MAC sublayer.

[PREFERRED EMBODIMENTS OF THE INVENTION]

In accordance with one aspect of the present invention, for performing data communication between a mobile station and a network, it is need to attach a header

and transmit. In this stage, the said MAC sublayer is to branch the data in a one-to-one manner or in a many-to-one manner in accordance with logical channel contained the said header.

In accordance with another aspect of the present invention, in a method for branching data in a third-generation mobile communication system, the MAC sublayer in the said mobile station is to try access through the common control channel added to the said header, to transmit SMS through the dedicated control channel(DCCH) and to branch the random access channel(RACH) in a many-to-one manner before the allocating of the radio bearer through the DTCH or when a short packet data is transmitted. Here, the common control channel is the logical channel and the random access channel(RACH) is the physical channel.

In accordance with another aspect of the present invention, in a method for branching data in a third-generation mobile communication system, the MAC sublayer in the said mobile station is to transmit the signaling data through the DCCH added to the said header and branch in a many-to-one manner through the synchronization channel when the radio bearer is allotted or short/long packet data transmit through the DTCH. Here, the DCCH is the logical channel and the synchronization channel is the physical

channel.

In accordance with another aspect of the present invention, in a method for branching data in a third-generation mobile communication system, the MAC sublayer in the said mobile station is to transmit the assignment of forward access through the common control channel added to the said header when the data is transmitted, transmit the SMS through the DCCH and branch in many-to-one manner through the forward access channel before the radio bearer is allotted through the DTCH or when a short packet data is transmitted. Here, the common control channel is the logical channel and the forward access channel is the physical channel.

In accordance with another aspect of the present invention, in a method for branching data in a third-generation mobile communication system, the MAC sublayer in the said mobile station is to transmit the multi signal data through the DCCH added to the said header and branch in many-to-one manner through the downlink shared channel. Here, the DCCH is the logical channel and the downlink shared channel is the physical channel.

In accordance with another aspect of the present invention, in a method for branching data in a third-generation mobile communication system, the MAC sublayer in

the said mobile station is to transmit the signaling data through the DCCH added to the said header when the data is transmitted and branch in many-to-one manner through the synchronization channel when the radio bearer is allocated through the DTCH or long/short packet data are transmitted. Here, the DCCH is the logical channel and the synchronization channel is the physical channel.

Figs. 1a and 1b are views illustrating data branched states between mobile and base stations to which a method for branching data in a mobile communication terminal in accordance with the present invention is applied.

A method for branching data in a mobile communication terminal in accordance with the present invention will hereinafter be described in detail with reference to Figs. 1a and 1b.

The channels associated with a MAC sublayer are classified into logical channels and transport channels.

The logical channels may generally be classified into a synchronization control channel(referred to hereinafter as SAPs) in interspaces between the MAC sublayer and upper layers, respectively.

The above logical channels may generally be classified into a synchronization control channel(referred to hereinafter as SCCH) for transferring system

synchronization data in simplex through a downlink, a paging control channel(referred to hereinafter as PCCH)for transferring paging information in simplex through the downlink, a common control channel(referred to hereinafter as CCCH) for transferring random access data, forward access control data and short packet data in duplex through the downlink and an uplink, a dedicated control channel(referred to hereinafter as DCCH) for transferring dedicated signal control information in duplex through the downlink and uplink, and a dedicated traffic channel(referred to hereinafter as DTCH) for transferring dedicated user long/short packet data in duplex through the downlink and uplink.

The CCCH, DCCH and DTCH are adapted to transfer some data on the basis of the connection between the MAC sublayer and a radio resource control (referred to hereinafter as RRC) layer and the presence of a radio bearer.

The transport channels are mapped into physical(referred to hereinafter as PHY)-SAPs. The above transport channels may generally be classified into a synchronization channels(referred to hereinafter as SCH) including first and second channels for transferring a system synchronization signal, a broadcast channel(referred

to hereinafter as BCH) for broadcasting system information in simplex through the downlink, a paging channel(referred to hereinafter as PCH) for transferring paging information in simplex through the downlink, a forward access channel(referred to hereinafter as FACH) for transferring forward access grant information and short packet data in simplex through the downlink, a random access channel(referred to hereinafter as RACH) for transferring random access data and short packet data in simplex through the uplink, a downlink shared channel(referred to hereinafter as DSCH) for multicasting user data in simplex through the downlink, and a dedicated channel(referred to hereinafter as DCH) for transferring dedicated signal information and dedicated user data in duplex through the downlink and uplink.

On the other hand, in a sending entity, the MAC sublayer has to create a MAC protocol data unit (PDU) with a MAC header including a type of a logical channel through which upper layer data is to be transferred. In a receiving entity, the MAC sublayer utilizes the logical channel type of the MAC header to determine a logical channel into which the received MAC PDU is to be demultiplexed.

Further, when the data is communicated by network in

mobile station, MAC sublayer in mobile station is transmitting from the radio link control(RLC) to CCCH for trying random access through the CCCH-SAP, the DCCH-SAP, the DTCH-SAP, DCCH for transmitting SMS and DTHC for transmitting the short packet data without the radio bearer allotted.

The MAC sublayer transmits the DCCH for transmitting the signal data and the DTHC, for transmitting the short/long packet data when the radio bearer is allocated. Here, the DTHC is the logical channel.

Further, the MAC sublayer is demultiflexing based on logical channel when the mobile station is received the data from network.

The logical channels are allotted based on traffic characteristic of the received entity in the said network, for examination, the allotted logical channel is CCCH when traffic uses the forward access recognition. If the traffic characteristic is SMS, the assigned logical channel is DCCH and if the traffic signal is the short packet data and the radio bearer is not allotted, the assigned logical channel is DTCH. Therefore, the MAC sublayer in the receiving part is multiflexing the FACH to CCCH, DCCH and DTCH through the CCCH-SAP, the DCCH-SAP, the DTCH-SAP. Here, the FACH is a transport channel and the CCCH, the

DCCH and the DTCH are logical channel.

If the traffic uses the multi signaling in the said received entity, the assigned logical channel is DCCH. Further, if the traffic uses the multi data, the assigned logical channel is DTCH. Therefore, the MAC sublayer in the receive part DSCH is demultiflexing to one of among the DCCH and the DTCH through the DCCH-SAP and DTCH-SAP of the Radio Link Control (RLC). Here, the DSCH is the transport channel and the DCCH and DTCH is also the logical channel.

Further, if the traffic is the dedicated signaling data transmitting entity, the assigned logical channel DCCH. If the traffic is the long/short data and the radio bearer is allotted, the assigned logical channel is the DTCH. Therefore, the MAC sublayer in the receiving entity is demultiflexing the DCH to one of the DCCH and DTCH through the DCCH-SAP and DTCH-SAP. Here, the DCH is the transport channel, and the DCCH and the DTCH is logical channel.

In the mean time, in the transmit part for multiflexing of network, the DCCH for transmitting of the SMS data, the CCCH for the admission of the forward access through the CCCH-SAP, DCCH-SAP and DTCH-SAP, and the logical channel of the DTCH for transmitting the short packet data is multiflexing to the FACH. Here, the FACH is the transport channel.

In addition, the DCCH for transmitting the multi signaling data through the DCCH-SAP and DTCH-SAP from the said RRC and the DTCH for transmitting the multi data are multiflexing to DSCH. Here, the DSCH is a transport channel.

And, the DCCH for transmitting the signaling data through the DCCH-SAP and DTCH-SAP from the said RRC and the logical channel of the DTCH for transmitting the short/long packet data when the radio bearer is allotted are allotted to DCH. Here, the DCH is transport channel.

And, in the receiving part of the network for multiflexing, the demultiflexing is accomplished based on the logical channel of the MAC header.

Therefore, the transmit entity give the logical channel based on traffic characteristics. In this stage, if the traffic is used as random access, the assigned logical channel is CCCH. On the other hand, if the traffic is used as random access, the assigned logical channel is the DCCH. Because the assigned logical channel is the DCCH when the traffic is the short packet data and the radio bearer is not allotted, the MAC sublayer in the receiving part is miltiflexing the RACH to one of among the CCCH, the DCCH and/or DTCH through the said CCCH-SAP and DTCH-SAP. Here, the RACH is the transport channel, the CCCH and the

DCCH are logical channels.

In the meantime, in the transmit entity, when the traffic is the dedicated signaling data, the assigned logical channel is the DCCH. On the other hand, when the traffic is the short/long data and the radio bearer is allotted, the assigned logical channel is the DTCH. In accordance with the foregoing, the MAC sublayer in the receiving part is multiflexing the DCH to one of the DCCH or the DTCH through the said the DCCH-SAP and the DTCH-SAP. Here, the DCH is transport channel and the DCCH and the DTCH are logical channels.

[ADVANTAGES OF THE INVENTION]

As apparent from the above description, according to the present invention, the MAC sublayer performs mapping and multiplexing/demultiplexing between logical channels and transport channels according to traffic characteristics to branch data. Therefore, the present invention has the effect of efficiently providing various multimedia and packet services.

[What is claimed is]

1. In a third-generation mobile communication system attached header for transmitting data communication between a mobile station and a network which have media access control(MAC) sublayers, respectively, a method for branching data in a third-generation mobile communication system, wherein said MAC sublayer is branching the trans channel in a one-to-one manner or in a many-to-one manner in accordance with the logical channel contained the said header.

2. A method for branching data in a third-generation mobile communication system, as set forth in claim 1, wherein the said MAC sublayer in the said the mobile station is to try access through the common control channel added to the said header, to transmit SMS through the dedicated control channel(DCCH) and to branch a random access channel(RACH) in a many-to-one manner before allocating of the radio bearer through the DTCH or when a short packet data is transmitted. Here, the RACH is a physical channel and the common control channel is a logical channel.

3. A method for branching data in a third-generation mobile communication system, as set forth in claim 1, wherein the said MAC sublayer in the said the mobile station is to transmit the signaling data through the DCCH added to the said header when the data transmits, and to branch a synchronization channel in a many-to-one manner when a radio bearer is allocated through the DTCH or the

short/long packet data is transmitting. Here the DCCH is the logical channel and the synchronization channel is the physical channel.

4. A method for branching data in a third-generation mobile communication system, as set forth in claim 1, wherein the said MAC sublayer in the said the mobile station wherein the said MAC sublayer in the said the mobile station is to transmit the forward access admission through the common control channel added to the said header, to transmit SMS through the dedicated control channel(DCCH) and to branch a forward access channel in a many-to-one manner before allocating of the radio bearer through the DTCH or when a short packet data is transmitted. Here, the RACH is a physical channel and the common control channel is a logical channel.

5. A method for branching data in a third-generation mobile communication system, as set forth in claim 1, wherein the said MAC sublayer in the said the mobile station is to transmit the multi signal data through the DCCH added to the said header when the data transmits, and to branch a downlink shared channel in a many-to-one manner when a multi data is transmitting through the DTCH. Here the DCCH is the logical channel and a downlink shared channel is the physical channel.

6. A method for branching data in a third-generation

mobile communication system, as set forth in claim 1, wherein the said MAC sublayer in the said the mobile station is transmitting the signaling data through the DCCH added to the said the header, and to branch a synchronization channel in a many-to-one manner when a radio bearer is allocated through the DTCH or the short/long packet data is transmitting. Here, the DCCH is the logical channel, and synchronization channel is the physical channel.